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September 28, 1993

Steve H. Wisness
Hanford Tri-Party Agreement Manager
U.S. Department of Energy
P.O. Box 550, A5-15
Richland, Washington 99352

Re: Regulatory Comments on "618-11 Burial Ground Expedited Response Action Proposal", DOE/RL-93-49, Draft A

Dear Mr. Wisness:

Enclosed are comments provided by the U.S. Environmental Protection agency, our contractors, and the Washington State Department of Ecology. If you have any questions, please contact me at (509) 376-9884.

Sincerely,

Laurence E Gadbois

Laurence E. Gadbois
618-11 Unit Manager

Enclosure (1) Regulatory Comments on "618-11 Burial Ground Expedited Response Action Proposal", DOE/RL-93-49, Draft A

cc w/Enc.1:
Bob McLeod, DOE
David Holland, Ecology
Roger Stanley, Ecology
Audree DeAngeles, PRC
Brian Drost, USGS
Becky Austin, WHC
Chris Webb, WHC
Wayne Johnson, WHC
Administrative Record; 618-11 ERA, and 300 Area Generic.

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Regulatory Comments on "618-11 Burial Ground
Expedited Response Action Proposal", DOE/RL-93-49, Draft A

GENERAL COMMENTS

The document provides only limited information on the extent of soil and groundwater contamination at the 618-11 burial ground. Historical records indicate that significant quantities of high-activity and transuranic (TRU) wastes are disposed of at this burial ground. Some of the burial ground wastes were placed inside waste packages that would often break open when dropped into the waste storage area directly on top of the soil. The depth to groundwater at this area is estimated to be 60 feet. Soil and groundwater may be contaminated here. There are, however, no monitoring wells adjacent to the 618-11 burial ground.

The expedited response action (ERA) provides a list of alternatives to be considered in conjunction with this site. Some of these alternatives are eliminated without explanation; the reasons for alternative elimination should be explained. The ERA compares the no-action, increased monitoring, waste removal, and feasibility demonstration alternatives. In the ERA report, the increased monitoring alternative is DOE's preferred because of its low cost and low risk of worker exposure. The ERA concludes that if increased monitoring shows evidence of contaminant migration, appropriate actions will be taken; however, the appropriate actions are not, but should be discussed in this report. The increased monitoring alternative makes no progress towards resolving the technical and safety issues connected with this cleanup.

The applicable or relevant and appropriate requirement (ARAR) discussion in Section 5 does not present a complete ARAR review. Specific regulations or criteria that remediation activities should comply with are not presented. However, if the action at the 618-11 burial ground is incorporated into the 300 Area, and the work plan and RI/FS documents for the 300 Area address ARARs for the 618-11 area, then Section 5.0 is sufficient. On the other hand, if the 618-11 area is not incorporated into or discussed in the 300 Area documents, then Section 5.0 is deficient and an expanded and thorough ARARs section should be developed.

Review of this 618-11 proposal has been a study in the psychology of language. All the language associated with the "no action" or "increased monitoring" was very upbeat, whereas the language associated with the "waste retrieval" or "feasibility demonstration" was dreary. Chapter 6 (Description of Action Alternatives) should be an unbiased presentation of the alternatives. It is not. Chapter 7 (Evaluation of Alternatives) should be an unbiased evaluation of alternatives. It is not. The screening criteria selected are biased such that they would make a strong support for the do little or nothing alternatives and concurrently make the active alternatives seem untenable. The screening criteria appear to have been selected to favor provide a favorable review of the no action or increased monitoring alternatives.

Over the past year, we have received status reports of the development of the EE/CA. The predominant obstacles described were safety associated with such high activity material, technical complexity of the robotics necessary, current non-availability of a 200 Area facility to store/process the material, transportation, and the high price tag associated with the removal prescribed

in the HDW-EIS. In order to implement the ultimate full scale removal, the safety/technical obstacles need to be worked out and the funding procured. Early this year, WHC broached the idea of doing a mock-up at 618-10 to iron out the safety/technical/transportation/storage/etc obstacles. We encouraged pursuit of that as an option. The DOE preferred alternative (monitoring) fails to tackle the obstacles necessary to do removal or remedial activities at this site. The DOE preferred alternative postpones tackling the issues that are necessary to address this as well as other burial grounds at Hanford and other highly contaminated burial grounds across the nation.

SPECIFIC COMMENTS

1. **Page ES-1, Executive Summary, last paragraph**
Just because there is a "absence of data" it does not mean that removal action should be eliminated from the choices. Has further characterization to properly evaluate this choice been considered?

2. **Page ES-2, Executive Summary, last sentence**
Elaborate on the appropriate actions if positive results are found with regard to contamination migration.

3. **Page 1, 3rd paragraph**
The Defense Waste EIS is paraphrased as stating that "**suggests** that the preferred alternative **should be** retrieval" [emphasis added]. The following quotes the EIS (page 3.35): "618-11 (the only TRU waste site outside of the 200 Areas plateau), would be retrieved and processed for geologic disposal." Two notes: (a) this does not **suggest** but rather **states** the preferred alternative, and (b) it is not a **should be** but rather a **would be** retrieval. This proposal should not inaccurately cite, paraphrase, or suppose an alternate meaning to statements in the HDW-EIS.

4. **Page 1, 3rd paragraph**
It is unclear if this paragraph is meant to recapitulate how the Defense Waste EIS addressed 618-11, or if this discusses DOE's current plans for ultimate disposition of this site. "What it is" needs to be clarified.

5. **Page 2, Section 2.1, 1st paragraph**
In later sections of this proposal, it discusses the need to consider rail transport for waste from this site rather than by truck on roadways. But this paragraph contains the distance to the nearest highway, but no mention of the distance to the nearest functional rail line. The rail distance isn't mentioned until page 43. This alternate distance should be included.

6. **Page 2, Section 2.1, 1st paragraph**
When DOE proposed 618-11 as an ERA candidate, there were a number of main points that prompted us to recommend initiation of an ERA EE/CA.
*) DOE, in the Defense Waste EIS had already identified this site for retrieval. A CERCLA 415 action is an appropriate mechanism for retrievals.
*) The waste that went into 618-11 was known to be very high activity mixed/dangerous waste, in un-contained structures, adjacent to WNP-2 (nearby human receptors) overlying an aquifer flowing to the Columbia River (ecological and more human receptors).

*) There was very little data to indicate if contaminants were reaching and being transported by groundwater.
*) Even if the waste is currently still contained within the vadose region, if it reaches and starts migrating with the groundwater the remedial costs escalate.
The distance between the bottom of the waste units to the top of the aquifer, the distance to the river, and groundwater travel velocity and time to the river are critical aspects of the site description, and should be added to section 2.1.

7. **Page 4, Figure 2**
The welding symbol needs to be explained. Perhaps in a footnote.

8. **Page 4, Figure 2**
The ribs of the drums should appear to be different from the weldings. This looks like 15 short cylinder sections rather than 5 drums.

9. **Page 5, Figure 3**
This figure shows a metal pipe welded to a concrete slab. Please explain how they did that.

10. **Page 6, Section 2.2, last line**
This description would imply that the ridge is still present. To me, the site looks very flat. If the ridge was annihilated during site preparation and stabilization, what value is added to the EE/CA by inclusion of this information?

11. **Page 8, Figure 5**
This picture is illegible. Suggest using a legible picture or drawing.

12. **Page 8, Figure 5 caption**
"Relationship" means that 618-11 and WPPSS have something to do with each other. "Illustration of the Proximity" might be better.

13. **Page 9, Table 1, definition of a boulder**
This should be greater than 256mm, not less than.

14. **Page 9, Table 1, reference**
This reference indicates that WHC developed this nomenclature in 1988. If the source for the nomenclature is referenced, **the source for the nomenclature** should be referenced, not another document of convenience that used it.

15. **Page 9, 1st paragraph, 8th line**
The picture showed that some cobble <u>was</u> (not is) present.

16. **Page 9, Section 2.3**
Probably the best available data on the geology at the 618-11 Burial Ground are contained in the WPPSS Final Safety Analysis Report (FSAR). Although this document is on the reference list in Section 8, it does not appear to have been consulted in writing this section. The FSAR contains detailed cross-sections and geologic details of the 618-11 area. This information should be

consulted prior to any decision making regarding the siting of monitoring wells. Also, some connection should be made between the "old" Ringold nomenclature used here and the new "standardized?" nomenclature for the Ringold (Delaney et. al., 1991; WHC-SD-ER-TI-003).

17. **Page 11, 2nd paragraph**
The second sentence about topography does not belong here. Suggest moving it to section 2.2 that is the topography section. When that is done, the apparent conflict between the sentence being moved that states that "...immediate vicinity is fairly flat" and "dunes can be found in the vicinity" should be resolved.

18. **Page 11, 4th paragraph, 3rd line**
I find it hard to believe that there are 130 days a year with a trace of rain, unless condensate from the WPPSS stacks is counted. This climatic data needs to be referenced.

19. **Page 12, 1st paragraph**
Wind and rain are relevant factors for contaminant migration that have been discussed. How thunder is important in a waste site description is nebulous to me. Please explain.

20. **Page 13, Section 2.5, first paragraph, last sentence**
The statement that flow to the east should be qualified; a significant component of flow may exist to the southeast (and this will possibly effect the placement of any future monitoring wells). The site-wide water table maps in recent years (e.g., Newcomer et. al. '92 and Kasza et. al. '92) have been drawn with a direct west to east flow in the area surrounding 618-11. However, this interpretation does not fit the movement of the tritium plume that has been steadily moving from the 200-East Area toward the 300 Area to the southeast. From 1968 through 1973, the annual monitoring reports presented the water table elevation and the tritium plume as single maps; this required an integration of the two data sets which resulted in the water-table contours being drawn to fit both the elevation data and the tritium data. The maps for 1968-73 consistently show a southeastern flow component which coincides with the direction of tritium movement. After 1973, the maps were separated in the annual reports and the subsequent water-table interpretations do not account for the tritium movement. The available water-table data are not sufficient to draw the east to west flow interpretation as the only possible interpretation.

21. **Page 13, Section 2.5**
Some additional discussion should be included which indicates the possible complexity of the hydrologic system in the vicinity of 618-11. Numerous previous investigators have concluded that the geometry of the system results in the water table being in the Hanford formation west of 618-11 and in the Ringold Formation at 618-11 and(or) that transmissivities are much greater to the southwest of 618-11 than at 618-11 (e.g., Bergeron et. al. '86 [PNL Draft Rept.], WPPSS FSAR '81, and Tomlinson et. al. '70 [ARH-1837]).

22. **Page 14, Figure 6**

This is commendably well done. Thanks.

23. **Page 15, Figure 7**
Some explanation of the hydrographs should be included in the text. These hydrographs indicate that significant changes in water levels have occurred at the site but no explanations are given. The water-level changes in wells 699-2-3 and 699-17-5 can probably be explained as a response to artificial recharge in the 200-East Area and possibly some small effects of nearby pumping during WPPSS construction. However, the response in well 699-9-E2 is entirely different. This is probably due to construction changes that have taken place in this well through time (the hydrograph probably does not represent a single observation point in the system, but a constantly changing observation point).

24. **Page 16, Section 2.5, third paragraph**
The WPPSS discharges of water to the surface are discussed and the conclusion is made that these have no impact on 618-11. This is probably true. However, more information should be presented; how large are the discharges?, what is contained in the discharges (annual WPPSS reports document the quality of the water)?, and do any of the nearby 600-Area wells show any effects from these operations?

25. **Page 22, 24...**
Webb 1993a and Webb 1993b are referenced but are not included in the bibliography. It needs to be added to the bibliography. Everything referenced has to be made available to the regulators and the public during document reviews. If these are classified characterization reports, they should not be alluded to in the text of the proposal.

26. **Page 23, Section 3.3, 2nd paragraph; page 25, and 4.1, first paragraph**
The first section states that "Dose rates found in waste units today are expected to be significantly reduced." The next section states that ..."it is possible for the dose rate of certain nuclides to actually increase.....This can occur as plutonium decay to Am-241." The concept of delining activity of the parent while the activity of the daughters is increasing with a sometimes increasing, sometimes decreasing net energy level should be briefly explained.

27. **Page 23, Section 4.0**
Cobalt-60 is listed as an expected contaminant in 618-11. A search of HEIS indicates that Co-60 has been detected in well 699-9-E2 (630 pCi/L on 1/3/80). If so, this might indicate migration from 618-11 to the water table. Presumably the data is HEIS is wrong, however, this must be verified.

28. **Page 24, last paragraph, 2nd line, 2nd sentence**
Suggest changing to "<u>Much of the volatile</u> liquid organic..."

29. **Page 25, Section 4.1, first paragraph**
The second sentence in this paragraph states , "With uranium and TRU there is the concern of a possible criticality." This statement should not stand alone. If any studies have been done on the 618-11 burial ground addressing

this possibility, they should be referenced. The criticality concerns should be addressed at some point.

30. **Page 25, Section 4.2, 2nd paragraph.**
Suggest adding to the end of the paragraph, when the last surface contamination survey was done. (The reader can't tell if anything has been done since 1982).

31. **Page 26, Section 4.2, first paragraph**
The concentration and depth of occurrence for the Cs-137 at 618-11 should be included (0.16 pCi/L at 8.8 meters?).

32. **Page 26, Section 4.2, first paragraph**
To determine "...that no significant health or environmental hazards were identified....." for 618-11 is unsubstantiated. Two core samples from this burial ground, which is likely very heterogenous, does not give enough data to make this conclusion.

33. **Page 26, Section 4.2, 2nd paragraph**
The HRS for the 618-11 burial ground (0.0) should have been disqualified for lack of data. The 0.0 score make it sound like it has low risk, which is not true.

34. **Page 26, Section 4.2, 4th paragraph, and Figure 10, page 28**
Two of the wells referred to in this section, 699-12-1A and 699-12-2A, are not located on figure 10.

35. **Page 26, 4th paragraph, last sentence**
If written accounts conflict as to whether a well exists at a certain location or not, we should suggest that you visit the site to identify if the well is actually there and marked, or not.

36. **Page 27, 1st and 2nd paragraph**
This indicates that Hanford's HEIS database was searched in order to collect the data from the predominantly WPPSS wells. We are not surprised that the only data that was found was for the couple of wells that were Hanford wells. And of course the Hanford wells aren't immediately downgradient of the burial ground. And based on the Hanford data set from wells that probably wouldn't detect a 618-11 plume, the conclusion in this document is that "No contamination attributable to the burial ground has yet been identified". And were WPPSS databases searched, since theirs are the wells downgradient from the burial ground? Apparently not. So if an investigation does not look at the right data set, how much credence is there in the conclusions from that investigation? Isn't the right conclusion from the data review done to date is that we have no idea if the contamination has entered and is migrating with the groundwater? **Recommendation**: Anywhere the document states something like "No contamination attributable to the burial ground has yet been identified" should be changed to "No contamination attributable to the burial ground has yet been identified, because we haven't looked in the right place", or "We have no idea if contamination has reached and is migrating with the

groundwater". This theme should be used until all the WPPSS data is thoroughly reviewed and included.

37. **Page 27, Table 4**
The number of gross-alpha results for wells 699-17-5 and 699-9-E2 are listed as 13 and 15, respectively. We were only able to access 2 and 4 values, respectively.

38. **Page 27, Section 4.2, second paragraph**
It is stated that no contamination of the ground water attributable to 618-11 has been found. Before this can be concluded, the data collected closest to the burial ground needs to be examined. According to WPPSS personnel, "shallow" wells (water table?) were previously monitored at WPPSS No. 2. These data are available from WPPSS (or in their annual monitoring reports) and should be checked to verify the statement of no contamination.

39. **Page 28, Figure 10**
Some of the wells appear to be mislocated (based on HEIS coordinates); 699-12-4B and 699-11-1A. Also, there are additional wells in HEIS that are located close to 618-11. These wells should be included in the figure; 699-12-1A, -2A, -2B, -3, -4A, -4C, and -4D and -13-1B and -2B. A quick field reconnaissance of the site indicates that there are a number of well casings relatively close to 618-11 (primarily to the north and south?). These observed casings are probably some of the above listed wells. An inventory of the available wells should be made; some of these wells may be useful for monitoring.

40. **Page 29, Section 4.3.1**
Surface contamination from several unplanned releases (see appendix C) is also a source for a potential exposure pathway and should be included in this section.

41. **Page 30, Section 4.3.3, 2nd paragraph**
The text states that biological intrusion can be eliminated from consideration due to no evidence of intrusion. But, what is preventing future biointrusion? The fences may keep out the large animals today, but what about small animals and future plant growth?

42. **Page 30, Section 4.3.3, 4th paragraph, Middle line**
"Isotopic analyses from the existing wells are almost nonexistent." Does the "existing wells" mean the hand full of Hanford's wells that are not downgradient, or does this include the WPPSS wells too? This needs to be clarified.

43. **Page 30, Section 4.3.4**
The last sentence from the previous section states "groundwater is currently considered a potential transport medium". The groundwater flows to the river. People drink from, swim in, irrigate with...the river. Please explain why the document states (last line on page 30) "Currently, no exposure routes exist."

44. **Page 30, Section 4.3.3, third paragraph, last sentence**

The conclusion is made that the potential for migration is low. This is based on the climate and vegetative cover. However, the waste site includes liquid-filled containers which were emplaced at depth (outside of the zone effected by vegetation). Although natural recharge at the site is probably extremely low, failure of a liquid-filled container at depth has the potential to move downward toward the water table.

45. **Page 30, Section 4.3.3, last paragraph**
The identified data gap could be narrowed by examination of WPPSS monitoring data (see earlier comments).

46. **Page 31, Figure 11**
This diagram of the conceptual model (CSM) reflects a lack of consideration given to surface contamination (now under clean cover) resulting from unplanned releases. It seems that these radionuclides are the most readily accessible to biointrusion and thereby should be included in the CSM.

47. **Page 32, Section 4.3.5**
Biotic receptors should be added to the list of possible receptors. Especially if there is contamination under the clean cover resulting from the unplanned releases. This contamination seems to be the most likely to be reached by biotic intrusions.

48. **Page 32, Section 4.3.5**
The following statement is somewhat confusing: "Currently, exposure pathways to contaminated media have not been identified at 618-11. Therefore, the potential for exposure to contaminants is low." If something has not been evaluated or identified, how can it be classified as low exposure? Please clarify.

49. **Page 32, Section 4.3.5, last 4 lines**
Several facts: (a) data from downgradient wells has not been examined, (b) section 4.3.3 identified that groundwater is currently considered a potential transport medium, (c) we know the groundwater flows into the river with lots of human and ecological receptors and exposure pathways. These facts lead to a conflicting conclusion to that stated in the document. The document states: "exposure pathways to contaminated media have not been identified". Equally, the following statement based on data provided in this document is unfounded: "Therefore, the potential for exposure to contaminants is low".

50. **Page 32, Section 4.3.5, last sentence**
Suggest changing "Potential future exposures" to "Additional future exposures", in light of the fact that there are existing potential current exposures.

51. **Page 33, Section 5.1, first paragraph**
The first sentence of this paragraph states that "compliance with ARARs is required when hazardous substances, pollutants, or contaminants are to remain on site as part of a final remedial action." This is not completely true. CERCLA Section 121 requires that any on-site remedial actions are to attain promulgated ARARs. Compliance with ARARs does not depend on whether hazardous

substances remaining on site, but on a remedial action being undertaken. The opening sentence of this paragraph should be rewritten to more accurately state the intent of Section 121 of CERCLA.

52. **Page 33, Section 5.1, second paragraph**
Potential ARARs or to-be-considered (TBC) criteria are not specified in this section. Referencing an environmental compliance manual does not satisfy the requirement to identify potential ARARs. A list of potential ARARs or TBC criteria should be developed for each remediation alternative.

53. **Page 33, Section 5.2, first paragraph**
The final sentence of this paragraph states that there are no federal chemical-specific ARARs for hazardous compounds in soil. However, RCRA Subpart S proposed action levels for soil should be identified as TBC criteria.

54. **Page 33, Section 5.2, first paragraph**
The state does not necessarily concur that there are no numerical ARARs associated with Interim Remedial Actions. Regardless of the legalities, it is in the interest of all parties to consider ARAR's during interim actions. Frequently interim actions are intended to be a final remedial action. By ignoring ARAR's an interim action jeopardizes Ecology concurrence with the final Record of Decision (ROD). The DOE runs the risk of taking action twice at the same waste unit. The cost differential between the planned interim action and the action required to attain ARAR's should be weighed carefully against what similar actions would cost in the future.

55. **Page 33, Section 5.2, first paragraph**
If the removal alternative were being seriously considered, then this Proposal should contain more specific discussion of cleanup standards. Numerical cleanup standards should be presented for all media and contaminants of concern.

56. **Page 33, Section 5.2, third paragraph**
The second sentence of this paragraph states that liquids generated "will be handled in accordance with this proposal and appropriate site procedures." This section should specifically identify the procedures and regulations that will be complied with for handling liquids, or reference a specific location within this document where that information is listed.

57. **Page 33, Section 5.1, 1st line**
"Compliance with ARARs is required..." No. Regulators have the option to waive ARARs. Suggest changing to "Compliance with ARARs **may be** required..."

58. **Page 33, Section 5.1, lines 3-4**
"(RI/FS) process identifies the cleanup standards and ARARs". The cleanup standards and compliance with/waivers to ARARs is established in the Record of Decision.

59. **Page 33, Section 5.2, 2nd sentence**

The correct message is that wavier of cleanup standards are not needed for interim actions. The regulators establish cleanup standards for interim actions that may or may not meet the final remedial cleanup standards.

60. **Page 33, Section 5.2, 3rd paragraph, 1st sentence**
The purpose for this statement is unclear so I don't know what to suggest changing it to.

61. **Page 33, Section 5.2, 3rd paragraph, 2nd sentence**
"Liquids generated by the ERA will be handled in accordance with this proposal". I can't find where in this proposal it discusses handling of ERA-generated liquids. Need to reference the section, or drop this reference to a non-existing section, which ever is the case.

62. **Page 34, Section 5.3**
The specific ARARs for this section are not, but should be cited.

63. **Page 34, Section 5.3, lines 7-8**
If the current Hanford solid waste acceptance criteria requires detailed waste characterization prior to shipping, this proposal should state that the criteria will to be changed to allow shipping across site prior to characterization. We are not going to build a WRAP-type characterization facility next to every waste site.

64. **Page 34, Section 5.3**
The text indicates that the WRAP facility is not available, and that a comparable facility will not be available until the year 2007. Currently, Hanford facilities are available to sample and analyze the types of materials that this ERA would generate. WRAP II, which was intended to take this type of waste, is required to be operational by September of 1999, pursuant to TPA Milestone 19. T-Plant is expected to be permitted to sample and repackage such materials in the near future. Samples could be sent from T-Plant or the field to the 325 or 222-s high-level laboratories for analysis.

65. **Page 34, Section 5.4, 2nd paragraph**
Suggest modification of the last sentence to read "...material **on public transport routes**", or what ever is the correct scope of their authority.

66. **Page 34, last two paragraphs**
Need to clarify if "DOT/NRC/DOE" means any of the three or all of the three.

67. **Page 35, paragraph 2, line 2**
"certified Type B". Please indicate who these are certified by.

68. **Page 35, paragraph 2, line 5**
We agree that use of rail may be a smart choice, but not particularly for the reasons provided here. "One is isolation from traffic". Roads can be closed for a truck convoy. The rail line crosses roads so that they would have to be closed while the train passes. "And occupied areas". There are no occupied areas between 618-11 and the central plateau. "Another is faster shipping time." Is a train traveling from 618-11 to the 200 area really faster than a

truck? "Also weight restriction on pavement needs to be considered." Sure, this is a given, but are these transport canisters of waste so much more heavy than current trucks traveling on site that this needs to be specifically mentioned? For example, will a canister of 618-11 waste be heavier than the burial boxes being transported to US Ecology, or the submarine reactor cores?

69. **Page 35, Section 6.0, paragraph 1, sentence 2**
"DOE prepared this 618-11 ERA proposal in response to a request from Ecology and EPA". This is an odd statement. It sounds like DOE was not interested in this as an ERA; that it was simply done to placate the regulators. The 618-11 ERA was discussed numerous times among the tri-parties prior to the regulator's letter requesting initiation of the ERA. This letter merely formalized a tri-party discussion. We recommend removing this sentence along with appendix A.

70. **Page 35, Section 6.0. paragraph 4**
"ERA removal actions are generally limited by statute to $2 million and 12 months." This statement within CERCLA is within the context of Superfund removals. This is not a requirement to non fund removals. ERA's at Hanford clearly have not followed these specifications. It is inappropriate to limit alternative selection or screening based on these specifications.

71. **Page 36, paragraph 1**
As in the previous comment, the purpose of this paragraph is unclear or misleading. As an example, the Carbon Tetrachloride ERA was never envisioned as completing the removal within 12 months and $2 million. Yet it was initiated by the tri-parties as an ERA. The 618-11 ERA removal was never envisioned by any of the tri-parties as being doable with 12 months or $2 million. It appears inappropriate to dwell on these specifications. We recommend removal of this paragraph.

72. **Page 36, paragraph 2**
The overall ERA objective is any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release from the 618-11 burial ground. Recommend that this sentence be changed accordingly. Note also that as a one-sentence paragraph, it would be better placed in the following paragraph.

73. **Page 36, paragraph 4, last sentence**
We recommend removal of this sentence, as there is currently no immediate use of the drinking water immediately associated with this burial ground. Within the context of the remainder of the proposal, it repeatedly states how there is no indication that contamination has escaped into the groundwater. And there is no groundwater usage downgradient from this burial ground. Thus, the discussion of alternative groundwater supplies appears inappropriate.

74. **Page 36, section 6.1, paragraph 1**
The no-action alternative is not a dictate of what the future action will be. Under the no-action alternative, the future action will be decided in the future.

75. **Page 36, section 6.1, last sentence on page**
Use of a WRAP-type facility is one of potentially many alternatives for waste processing. That decision will be made in the future.

76. **Page 37, Table 5**
The following deficiencies were noted with this table which lists potential ERA options.

- One of the options included in this table is to preclude use of local groundwater within a one-mile radius. This option is not retained since the extent of groundwater contamination is not known at this site. The alternative should be retained until groundwater monitoring proves that no contamination is present.
- The options: In situ vitrification, homogenize/remove, enhance onsite characterization, and chemical treatment are dismissed with very little explanation. A detailed explanation for not retaining these alternatives should be given.

77. **Page 38, paragraph 1, sentences 1 and 2**
Again, the no-action alternative makes no conclusions about what actions will be done in the future. These sentences should be removed.

78. **Page 38, section 6.2, paragraph 1, last sentence**
Suggest changing to something more like "Data examined to date has been too limited to state whether or not contamination has reached the groundwater".

79. **Page 38, Section 6.2, second paragraph**
This section indicates that monitoring wells will be installed in the vicinity of the 618-11 burial ground, and that soil samples will be collected. This section further states that in areas where contamination is indicated, samples would be collected for radiological and hazardous chemical constituent analysis. This section should discuss how the contamination will be identified prior to sample analysis.

80. **Page 38, Section 6.2**
In addition to the proposed new monitoring wells, some of the existing wells may prove useful for water-level (and water-quality?) monitoring.

81. **Page 38, Section 6.2, 2nd paragraph, last sentence**
Hazardous chemical constituents can be present without any associated radioactive contamination. If sampling for chemicals is limited to only where radioactive contamination is indicated, then hazardous chemical horizons may be missed. These chemicals can migrate differently and be adsorbed by the soil in a different manner than radionuclides.

82. **Page 38, Section 6.2, paragraph 2, middle**
The location for the proposed new wells should be indicated on a figure. This proposal does not give the reader the information necessary to envision where these wells would be located.

83. **Page 38, Section 6.2, paragraph 2, middle**

"Drilling would be accomplished with cable tool". Please explain why this would be the most cost-effective method to drill wells primarily intended for groundwater monitoring.

84. **Page 38, Section 6.2, paragraph 2, second to the last sentence**
"soil physical properties and radiological". Suggest adding organics, as some organics from recently ruptured canisters could be in vapor phase transport through the vadose.

85. **Page 38, Section 6.2, paragraph 2, last sentence**
"radiological and hazardous chemical". Please specify which analytes.

86. **Page 38, Section 6.2, paragraph 3, second line**
Recommend a minimum of two quarters of data showing below detection, or below significant levels of concern before the analyte list is reduced.

87. **Page 39, Section 6.1, sentence 1**
The HDW-EIS does not "suggest" removal. It states the burial ground "would be" removed. Please correct references such as this throughout the proposal.

88. **Page 39, Section 6.3, paragraph 1, lines 5-6**
The proposal states that "There is a lack of proven physical removal techniques for 618-11 Burial Ground wastes." Over the past year or so, we have been provided numerous presentations of technologies for robotic heavy equipment that can excavate large objects, chop them into manageable pieces, and load them into containers, etc. We have been shown numerous instances of robotic removals done by various vendors and DOE sites. Through ERA interface meetings as well as other technology demonstrations, we have been shown that physical removal techniques have been effectively used. This contradicts the statement in the 618-11 proposal.
This and the next two sentences are examples of the defeated language that the proposal used in connection with the alternatives that DOE does not want to do. The two sentences beginning on the 6th line apply to nearly everything that is done at Hanford, yet they are written as significant time and expense obstacles associated with this alternative, which would make it appear less favorable.

89. **Page 39, Section 6.3, paragraph 1, last sentence**
Will 618-11 burial ground have a whole RI/FS process to itself or be part of another operable unit? What is the schedule for this operable unit? Will the inclusion of 618-11 in this unit delay remediation or lead to no action?

90. **Page 39, Section 6.3, paragraph 2, 2nd sentence**
"Radiological field survey can only be used to assess radionuclide contamination..." Field survey can only give dpm or cps. Clarify what assess means here. "Observation and field characterization techniques would be relied on to provide characterization data" is not acceptable. Field data on soils is not adequate for constituent characterization. For example, alpha components can easily be masked in the field.

91. **Page 39, Section 6.3, paragraph 2, first 3 lines**

"Estimates of radionuclide content are required"... by who, and what does it take to determine their jurisdiction, and if they do have jurisdiction do they grant waivers of the letter of their laws and associated process if the intent of the law is satisfied. This is significant and needs clarification.

92. **Page 39, Section 6.3, paragraph 2, last half**
This paragraph is laced with negativism. Evaluation of alternatives for the purposes of selection of a preferred alternative should not begin until section 7. The DOE-favored alternatives are written with a positive tone. The other alternatives should be with the same tone. Towards that end: suggest changing "Some retrieved solid wastes may not be amenable" to "Most solid waste should be amenable". Change "Large, (sic) samples of radioactively contaminated material may pose hazards during shipping, sample preparation, analysis, and disposal." to "Large samples of radioactively contaminated material may pose hazards during shipping, sample preparation, analysis, and disposal. The impact from this can be minimized by breaking/cutting large material into smaller pieces and through transport and storage methods that provide shielding." Change "Laboratory capacity...may not be available", to "Laboratory capacity...may be available". Drop the last sentence. Laboratory data from burial grounds -- an inherently heterogenous situation -- aren't reliably representative. This is equally applicable to the vadose samples proposed for collection under the "Increased Monitoring" alternative, or during future retrieval operations.

93. **Page 40, Section 6.3.1, paragraph 2, first line**
Suggest adding "Equipment and receptacles capable of handling **or cutting** large..."

94. **Page 41, paragraph 1, 4th last line**
"21 feet deep (max)". Please clarify if this is inclusive or exclusive of the 6' of overfill. This makes a big difference in terms of volume involved in a removal operation.

95. **Page 41, section 6.3.2, paragraph 2**
As an option, can the whole caisson be yanked as a unit? I don't know, but this option needs to be mentioned and explained as a reasonable option or not.

96. **Page 41, last line**
"would be documented." The term "documented" needs to be detailed when this rolls into the RI/FS process. Also need to identify when it would be backfilled -- enough for safety reasons, and enough for surface vegetation restoration -- relative to remedial actions.

97. **Page 41, Section 6.3.2**
This section, which describes removal of caisson wastes, should include an estimate of the volume of waste known to be present in the caissons.

98. **Page 41, Section 6.3.2, second paragraph**
A robotic arm capable of navigating the multiple angles of the caisson chutes could be problematic. An alternative would be to remove the chutes, excavating a direct access to the top of the caisson. Through direct vertical

access thereby achieved, a vastly simpler pick-up mechanism could be operated. The increased potential for radiation exposure would be accounted for through remote handling and shielding.

99. **Page 42, Section 6.3.3, paragraph 1**
Are there different equipment needs for one vs the other method? If there is a difference, at what point during equipment procurement does the choice of methods need to be made?

100. **Page 42, section 6.3.3, paragraph 3**
Is the larger diameter sleeve pounded down into the ground, or is it threaded and screwed in, or is the soil excavated and the sleeve lowered into the hole? This clarification should be provided if the method is known.

101. **Page 43, paragraph 1, second last line**
"addition of a one mile rail spur". This information was needed near the front of the document.

102. **Page 43, section 6.4, paragraph 2, last few lines**
Suggest changing "where it would be indefinitely stored until there is a capability to dismantle, characterize and process the waste for final disposal." to "where it would be stored until its disposition is determined.".

103. **Page 44, Section 7.0, paragraph 3, last half**
As mentioned in several previous comments, the one year time frame is an inappropriate evaluation criteria to apply to the 618-11 ERA. Consistency with the limitations of Superfund ERAs is not required. A number of past and current Hanford ERAs have not followed this one year specification. At the same time we are reviewing this 618-11 proposal (which evaluates alternatives based on the one year time frame), we are reviewing the N springs ERA (which does not evaluate alternatives based on compliance with the one year time frame). Thus DOE's application of the one year specification to the 618-11 ERA is inconsistent with past, other present and upcoming ERAs. It has been obvious that the removal/disposal alternative prescribed in the HDW-EIS is more than a one year effort. We recommend that the one year / $2 million screening be removed from the evaluation of alternatives.

104. **Page 45, paragraph 1, third line**
Change "human health and environment" to "human health and the environment".

105. **Page 45, paragraph 1, last line**
Change "Compliance with ARAR is" to "Compliance with remedial applicable, or relevant and appropriate requirements (ARARs) is"

106. **Page 45, last paragraph, line 4**
Change "Future removal would be" to "Future removal may be".

107. **Page 46, paragraph 1, lines 2-4**
Please provide the pages where the statement "No impacts with or without further remediation" were made in the HDW-EIS. Given the current lack of information on migration of waste from this site, I question that more

information was available in the mid 1980s to make a sufficiently defensible statement of "no impacts" to be worthy of reference in the current proposal.

108. **Page 46, paragraph 1, last 3 lines**
The burial ground has been given a hazard ranking score of 0.0 based on a lack of sufficient information to assess its hazard. The HDW-EIS decision for physical removal was not in opposition to a technical analysis that would indicate otherwise. The way that this proposal is written, it appears that physical removal is unjustified based on technical analysis. Recommend that this paragraph is removed. This recommendation is supported by the last two lines of the next paragraph (paragraph 2, page 46).

109. **Page 46, paragraph 2, line 3**
Suggest changing "so that the calculated (predicted) impacts" to "so that the potential impacts".

110. **Page 46, paragraph 2**
It should be noted in the proposal that Sr-90 and Pu-239 are significantly less mobile than other contaminants placed in the burial ground.

111. **Page 46, section 7.1.2, paragraph 1**
Please fix this to accurately reflect the removal/remedial decision process, i.e. who writes action memorandums (not DOE), who writes CERCLA Records of Decision (not DOE), how cleanup priorities currently in the TPA evolve and provide some direction but is not an absolute dictate of the sequence for site cleanups.

112. **Page 46, section 7.1.2, paragraph 2, middle**
"The site has also been addressed...in a DOE Record of Decision...It also may be the most efficient mechanism". Is this how this was meant to be strung together? If so, please remove this portion. We have made it well known what we think about the efficiency of the NEPA EIS process for CERCLA waste site decisions. If a different meaning was meant, please rephrase this portion of the paragraph.

113. **Page 47, line 6**
Suggest changing "effective" to "adequate". Note how it was used on page 45, last line of paragraph 1.

114. **Page 47, paragraph 1, last sentence**
Note again that the no action alternative makes no decision about what, how, or when a future action will take place. Recommend that this sentence be removed.

115. **Page 47, paragraph 2, last sentence**
The word "worked" throws this into the past tense, but this proposal is about the current situation and future actions. Was "works" the intended meaning? Also "literally" needs to be removed or replaced. Are there thousands? Then it should state "thousands", not "literally thousands".

116. **Page 48, paragraph 1, last line**

"subject to periodic DOE review". Please change DOE to Tri-Party.

117. **Page 48, section 7.2.2, paragraph 2, middle**
If a narrow plume originates close to but between two wells, it can pass between the wells undetected. Wells located some distance away, may have a better chance of intercepting a dispersed plume however the concentrations may be lower. Poorly soluble DNAPLs could be entering the aquifer very near but slightly to the side of up-gradient and go undetected in a monitoring well. The point of this comment is that there are a lot of complexities that invalidate the simplified statement "This risk is minimal...". This statement should be revised or removed.

118. **Page 48, section 7.2.2, paragraph 3, line 2**
Change "indicator and basis" to "indicator and additional basis". Note that there is already a basis for corrective action.

119. **Page 48, Section 7.2.2, paragraph 3**
"investigation would be of most benefit close to the time of anticipated physical removal". If the DOE assumption that waste is not migrating from this waste site is true, then investigation for the sake of characterizing the location and extent of the waste could be done any time prior to physical removal and this data would still be accurate at whatever time the future removal is performed. Characterization done sooner rather than postponed has several important advantages: (1) validation or rejection of the DOE assumption that waste is not migrating from the site, and (2) refined characterization of the waste site will allow better planning of the remedial approach and equipment needed so that appropriate levels of funding can be requested and technical specifications for the procurement of equipment can be defined.

120. **Page 48, Section 7.2.2, paragraph 3**
"The environmental impact of the intrusive burial ground investigation would be of most benefit". This needs to be restated so that it does not state the environmental impact of the investigation is beneficial.

121. **Page 49, Section 7.2.3**
This section identifies low risk to the public, workers, and the environment as advantages of the increased monitoring alternative. Disadvantages associated with this method, such as the fact that no new information on the materials in the burial ground and no new site characterization information will be gained from increased monitoring, should also be discussed.

122. **Page 49, Section 7.3.1, first paragraph**
This section states that waste removal and monitored storage requires 5 years of waste retrieval, 1 year of advanced engineering and procurement, and 4 years for retrieval implementation. This schedule does not include time for storage, final processing, and disposal. This schedule and the rationale for the estimate of waste retrieval and retrieval implementation time should be discussed in detail.

123. **Page 50, paragraph 2, end of quote**

Note that DOE states that waste can continue to be stored safely and monitored while waste characterization and engineering development and evaluation are being conducted. The HDW-EIS does not state that it is wise to postpone the characterization/engineering work for any extended period of time. It also needs to be noted that there was a paucity of data on which the HDW-EIS made the statement that waste in the site was being stored safely.

paragraph 3, line 2 "debate <u>with</u> the above", please clarify <u>with</u>.

124. **Page 50, last line**
"analogous resources" needs clarification. For example, what is an analogous resource to shrub-steppe habitat.

125. **Page 51, paragraph 3, line 2**
"mobility" is reduced by transfer from an uncontained state within the ground to a impermeable container. Depending on one's definition of toxicity, it is also reduced due to severance of the exposure route (via groundwater). Recommend that this sentence be changed to "This alternative would potentially relocate most of the waste, reduce the toxicity and mobility, and have little effect on the volume prior to treatment".

126. **Page 51, paragraph 3, line 4**
Suggest insert of the following after the current third sentence. "Waivers of requirements for in-site characterization prior to shipping will be obtained if necessary.

127. **Page 51, paragraph 4, lines 4&5**
Change "these units would be" to "these units may be".
Insert something line the following after the second sentence: "Alternatively, trench waste has less packaging and thus may be more mobile."

128. **Page 51, paragraph 4, last line**
"waste posing unacceptable hazards". Throughout the document until this point, the DOE has been describing the waste as posing no hazard, even if no further action is taken at the site. At this point in the document, however, the waste is stated as now posing unacceptable hazards. The document needs to consistently state the level of risk posed by the waste.

129. **Page 51, last paragraph, sentence 2**
"did not find cost differences between removal options which would make removal more realistic" should indicate that other options should be examined in order to find one that is more realistic. As an example, in the next sentence it states that shipping/storage is a primary cost driver. Direct deposition of wastes into shielded railroad cars with no special packaging could be examined. Alternatively, deposition into drag-off boxes that are contained within a rad-shielded overpack box could be examined. Storage disposal fees are also a cost driver. It needs to be clarified how much of this is associated with EM-40 charging EM-30 for transfer of jurisdiction of the material. Also, how much of this is associated with storage in perhaps overly protective containers, etc. Keep in mind that the current state is waste with no containers and several feet of clean fill over it, and is currently adjacent to 1500 person work force and a billion dollar facility.

That should be a benchmark from which to measure improvements in the protectiveness of the storage approach.

130. **Page 52, first line**
Suggest changing "presents the most risk" to "presents the most short term risk".

131. **Page 52, lines 4&5**
Suggest changing to "temporary storage site, temporary storage, and any accidents that may occur during any of these processes."

132. **Page 52, section 7.3.3, paragraph 2**
After the first sentence, insert another such as the following: "Therefore the feasibility demonstration alternative in section 7.4 is important to reduce this uncertainty."

133. **Page 52, section 7.3.3, paragraph 2**
Suggesting changing "DOE Order 5480.21, .22 and .23" to "remedial potential ARARs"

134. **Page 52, section 7.4.1, line 1**
The first two sentences should be removed. Previous comments have already addressed the one-year time frame issue. The alternative that technically makes sense should be the primary evaluation criteria. Throughout this document, procedural and technical difficulties are presented that must be resolved. The feasibility demonstration is the vehicle to resolve those difficulties. Timely resolution of the difficulties is needed to make an informed decision as to when and how the site should be cleaned.

135. **Page 52, section 7.4.1, paragraph 2**
'However, the safety analysis should demonstrate that the "risk" of the act is acceptable.' Thank you for using an optimistic statement associated with a non DOE-preferred alternative. Also, since the waste retrieval alternative would utilize equally or more stringent safety precautions as the demonstration, it should also be noted in the waste retrieval alternative that "safety analysis should demonstrate that the 'risk' of the act is acceptable".

136. **Page 53, section 7.4.2, paragraph 3**
"It is uncertain that the proposed action would achieve this." There are often elements of uncertainty in cleanup actions. If interim actions are consistent with anticipated final remedial actions, then they are appropriate actions. The waste removal or feasibility demonstration options are substantial activities consistent with anticipated final remedial actions.

137. **Page 53, second last paragraph, last sentence**
Please clarify. (The useful cask life, current schedules for operational status of the vitrification and WRAP facility, probable start date for placement of material into a cask). Note that this clarification can be provided in the comment response, and may not be needed in the actual proposal.

138. **Page 54, section 7.5, first line**
Is "relevant criteria" the same as "screening criteria" used on page 55, paragraph 4? If it is the same please use the same term. Also, what is the guidance for selection of these criteria? Note that it does not follow the NCP's nine criteria.

139. **Page 54, section 7.5, paragraph 3**
Here's another reference to the 12-month goal. It should be removed, or put in context of the more important goal to work towards what technically makes sense, not necessarily what can be squeezed into a 12 month period.

140. **Page 54, Section 7.5**
No action and monitoring do not qualify as expedited actions. The Tri-Parties should not execute an action memorandum to do no action or routine monitoring. If one of these alternatives are selected, then there is simply no ERA.

141. **Page 54, Section 7.5**
There is little doubt that the long term goal of consolidating hazardous substances in up-to-date facilities in the 200 areas is not met by leaving high-activity waste in these two burial grounds.

142. **Page 54, section 7.5, paragraph 4, last sentence**
Suggest changing to read "...groundwater affects and may detect migration, if present." Note that if migration is already occurring, wells installed now would not provide early knowledge. Also migration may slip past the monitoring wells undetected. Thus we should use "may" rather an "would".

143. **Page 55, paragraph 1**
"Very significant short-term endangerment...the feasibility demonstration option". But in section 7.4.1 paragraph 2 it states 'the safety analysis should demonstrate that the "risk" of the act is acceptable'. Recommend removal of this whole paragraph.

144. **Page 55, paragraph 2**
Suggest removal of this paragraph. Data is too sparse to make any meaningful conclusions on current migration conditions from this burial ground.

145. **Page 55, paragraph 3, first sentence**
Suggest changing to "...increased monitoring would clarify if substantial threat to human health or the environment is present."

146. **Page 55, table 7**
For the no action alternative, the #2 and #3 columns would be better labeled as "unknown" due to lack of data.

147. **Page 55, table 7**
Please provide the legal/regulatory references for "administrative feasibility". This term needs to be defined if used in the proposal, and some reference to why the regulators should accept this as a valid criteria for screening alternatives.

148. **Page 55, table 7**
Should add a column such as: "assists efforts for final remedial action (i.e. does it resolve safety and technical feasibility questions)".

149. **Page 55, table 7**
"Environmental impact" should be broken into short-term and long-term. Also each of those needs to be evaluated in two ways, impact from the act itself and impact from uncontained waste entering and spreading via the groundwater.

150. **Page 55, Table 7**
This table summarizes the second-phase evaluation of the alternatives, which include technical feasibility, effectiveness and reliability, environmental impact, administrative feasibility, and cost criteria. The short-term effectiveness and reliability criterion is rated high for the no-action and increased monitoring options, but is rated low for the waste retrieval and feasibility demonstration alternatives. This table should also include an evaluation of the long-term effectiveness of these alternatives. This criterion would be rated low for the no action and increased monitoring alternatives and high for the waste removal and feasibility demonstration alternatives.

151. **Page 56, paragraph 1, fifth line**
"Hasty attempts...". No one is advocating "Hasty". The proposal describes "detailed design would be completed after intrusive site characterization" (page 43). That's not hasty.

152. **Page 56, paragraph 1, line 6**
Recommend replacing "There appears to be no" with "The DOE has not been able to determine if". This better describes the state of understanding based on very limited data. Better yet, this whole sentence should be removed, because a multi-year effort is not an "impatient" removal.

153. **Page 56, paragraph 1**
Recommend this paragraph be removed entirely. It has no value added, and all the statements in it have been questioned in previous comments.

154. **Page 56, paragraph 2**
Recommend removing "degree of groundwater protection and" from the third line. Drawing groundwater samples does not protect the groundwater. A follow-on action might be initiated that could protect the groundwater.

155. **Page 56, paragraph 2, sentence 3**
Recommend changing to read "The alternative of increased monitoring will define the magnitude of the current poorly understood level of contaminant migration".

156. **Page 57, Section 8.0**
The La Sala reference is incorrectly stated. It should read,
La Sala, A.M. Jr., and G.C. Doty, 1975, Geology and Hydrology of Radioactive Solid-Waste Burial Grounds at the Hanford Reservation,

Washington, U.S. Department of the Interior, Geological Survey (Open-File Report 75-625).

157. **Page 58**
We would like copies of:
Webb, 1993a; and Webb, 1993b unless these are classified. If so, they should not be referenced in a public document like this proposal.

158. **Appendix E**
This proposal will not be decided primarily on a cost basis. There is sufficient cause to expect that this burial ground will be remediated at some point in time.

159. **Appendix E, pages E-4 and E-5**
These sections describe two scenarios for removal of wastes from the pipe units. The first scenario assumes that all 50 pipe units fully contain waste; the second scenario assumes that all 50 pipe units contain waste to 60 percent capacity. Both scenarios, however, list the same cost ($700,000) for the boxes needed to dispose of TRU wastes. The second scenario would theoretically contain less waste, and require fewer disposal boxes. The listed costs should be justified.

160. **Page B-3, paragraph 1, line 4**
Suggest changing "dispersed" to "disposed". "Dispersed" implies intentionally spread across the site, when in fact waste generally was put in discrete receptacles.

161. **Page B-3, Site Description, paragraph 3**
"The site received...dry...". And then later "The trenches received...some liquids". This contradiction should be resolved and corrected.

162. **Page B-4, table at top**
In order to avoid possible confusion, this should be footnoted something to the effect that this table does not include waste disposed from 1954 through August, 1960.

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TYPOGRAPHICAL ERRORS

Page 6, Section 2.3, line 1
Should "sand sand silt" be "sand and silt"?

Page 11, Section 2.4, last paragraph, line 3
"precipi-tation" should be "precipitation"

Page 12, Section 2.5, last paragraph, line 1
"geology" should be "hydrology"

Page 13, Section 2.5, fifth paragraph, line 4
"based on an the" should be "based on the"

Page 16, 4th paragraph, 4-5th lines
Typo: "siting of WNP-2 reactors" should be "siting of WNP-2 reactor" (note singular reactor).

Page 25, 2nd paragraph, 3rd line
Typo: "but not when in an oxide"

Page 30, Section 4.3.3, 2nd paragraph
"form" should be "from"

Page 45, paragraph 5, 2nd last line
"an more" should be "a more"

Page 47, line 1
"efficient us" to "efficient use"

Page 50, line 3
"remobilization" to "remobilization of".

Page ATT-1, last section on radiation, second line, last word
"by" should be "of".

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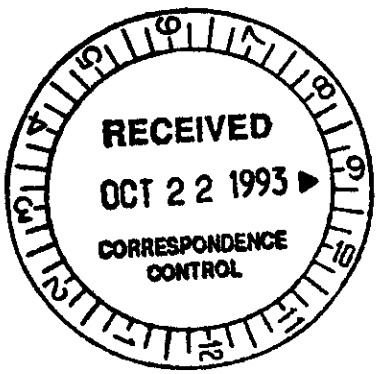

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